

## REMARKS

Claims 1, 3-5, 10, 15-17, 20, 29, and 32 have been amended. Claims 1-12, 15-20, 29-32, and 37-40 remain in the application. Reconsideration of the application in view of the amendments and the remarks to follow is requested.

Claims 1-2 and 9 stand rejected under 35 U.S.C. §102(b) as being anticipated by Fujii et al. (5,355,010). Claims 3-8, 10-12, 15-20, 29-32 and 37-40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Fujii et al.

Regarding the anticipation rejection against claim 1 based on Fujii, such claim is amended to recite during the same processing step, forming an oxide layer over the silicide layer and activating the conductivity-enhancing impurity within the silicide layer. Such amendment language is supported by the originally-filed application at, for example, pages 8-9. The Examiner tacitly admits that Fujii fails to teach activating the conductivity-enhancing impurity by taking official notice that post processing such as RTP steps to activate dopants and annealing in oxygen-comprising atmospheres are **well known process steps** used in semiconductor manufacturing art (page 3 of paper no. 24). Accordingly, claim 1 as amended overcomes the anticipation rejection. Addressing the inappropriateness of an obviousness rejection against claim 1 is now presented.

By taking official notice, the Examiner is effectively stating that even though Fujii does not teach activating dopants, the process is well known, and therefore, obvious to modify the Fujii invention to teach such processing. Even assuming

that modifying the Fujii invention to teach activating dopants is appropriate (which Applicant clearly demonstrates subsequently that such modification is inappropriate), Fujii fails to teach or suggest any **timing relationship** of performing an activation step. That is, Fujii fails to teach or suggest activating the conductivity-enhancing impurity **during the same processing step** as forming an oxide layer over the silicide layer. Fujii teaches implanting boron ions in a tungsten silicide layer 12, then forming a silicon oxide film on the tungsten silicide layer 12, and then patterning the silicide layer 12 (col. 4, lns. 30-50). Fujii teaches only sequential processing steps. Accordingly, even assuming the Fujii invention could appropriately be modified to include activating the conductivity-enhancing impurity, there is no timing relationship to performing an activation step. Accordingly, in no fair or reasonable interpretation does Fujii teach or suggest, singularly or in any combination with the art of record, during the same processing step, forming an oxide layer over the silicide layer and activating the conductivity-enhancing impurity within the silicide layer as recited in claim 1. Fujii, singularly or in any combination with the art of record, fails to teach or suggest a positively recited limitation of claim 1, and therefore, claim 1 is allowable.

Moreover, regarding the Examiner taking official notice that post processing such as RTP steps to activate dopants and annealing in oxygen-comprising atmospheres are **well known process steps** used in semiconductor manufacturing art (emphasis added) (page 3 of paper no. 24,) such rationale to

support an obviousness rejection is contrary to the Federal Circuit law and MPEP authority. In fact, the Federal Circuit has specifically rejected the notion that "well known in the art" can support an obviousness rejection stating that "it is irrelevant in determining obviousness that all or all other aspects of the claim may have been **well known in the art.**" *Jones v Hardy*, 727, F.2d 1524, 1527, 1528, 220 USPQ 1021, 1024 (Fed. Cir. 1984) (emphasis added). See, *ACH Hospital Systems, Inc. v. Montifiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984) ("Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination"). The level of skill in the art cannot be relied upon to provide the suggestion to modify a prior art reference. MPEP §2143.01, (8th ed.) citing *Al-Site Corp. v VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161, 1171 (Fed. Cir. 1999). Accordingly, pursuant to the above authority, well known within the ordinary skill in the semiconductor manufacturing art does can not support a *prima facie* case of obviousness, and therefore, the official notice is inappropriate and should be withdrawn. Consequently, the obviousness rejection against claim 1 based on the inappropriate official notice fails. Claim 1 is allowable for this additional reason.

Additionally, the Examiner is respectfully reminded that the mere fact that references can be modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP §2143.01 (8<sup>th</sup> ed.) citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir.

1990). Although a prior art device “may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so”. 916 F.2d at 682, 16 USPQ2d at 1432; MPEP §2143.01; See also *In re Finch*, 972 F.2d, 1260, 23 USPQ2d, 1780 (Fed. Cir. 1992). Since the Examiner has failed to provide an objective reason to modify the Fujii invention relying only on an inappropriate official notice to well known in the art, the Examiner is effectively stating that the Fujii can be modified, and therefore, it is obvious to so. However, this rationale is contrary to the above Federal Circuit authority, and therefore, the obviousness rejection against claim 1 fails. For all the above stated reasons, claim 1 is allowable.

Claims 2-12 and 37 depend from independent claim 1, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the obviousness rejection against claim 15 based on Fujii, such claim recites during the forming of the silicide layer, providing a conductivity-enhancing impurity within the silicide layer. The Examiner correctly states that Fujii does not disclose other various methods of doping a silicide layer besides ion implantation (page 3 of paper 24). However, the Examiner states that it would be an obvious matter of design choice to dope the silicide by the other claimed methods since it appears that the method of doping silicide is not a critical part of the invention, and therefore, the invention would perform equally well with any doping method of the silicide (page 3 of page 24). The Examiner

is mistaken.

Respectfully, the Examiner is attempting to simplify the difficult task of determining obviousness by focusing on the difference of only one limitation recited in claim 15 and the prior art, and such a focus is contrary to the long held patent legal doctrine to consider the claimed invention “as a whole” during examination for allowance. Focusing on the obviousness of substitutions and differences instead of on the invention as a whole is a legally improper way to simplify the difficult determination of obviousness. *Hybritech Inc. vs Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81, 93 (Fed. Cir. 1986); see also MPEP §§2141 and 2143.03. Focusing on minor differences between the prior art and the claimed invention is inappropriate. *Northern Telecom, Inc. vs. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321, 1324 (Fed. Cir. 1990) cert. denied, 498 U.S. 920 (“whether the changes from the prior art are ‘minor’, as Datapoint argues, the changes must be evaluated in terms of the whole invention, including whether the prior art provides any teaching or suggestion to one of ordinary skill in the art to make the changes that would produce the patentee’s method and device”). By focusing on only one limitation of the claimed invention, that is, the specific method of providing a conductivity-enhancing impurity within the silicide layer, the Examiner is inappropriately not evaluating the claimed invention as a whole. Evidence the Examiner is not considering the Applicant’s claimed invention as a whole is the finding of “obvious design choice” referring to the difference between doping methods. Not only is such a statement not relevant to the obviousness determination as the

above authority indicates, such a self-serving conclusion completely circumvents the difficult task of determining obviousness and is contrary to the following consideration of the semiconductor arts.

A prominent goal in the semiconductor arts is to reduce processing steps to increase yield output, and therefore, the semiconductor industry abhors needless additional steps. Therefore, during the forming of the silicide layer, providing a conductivity-enhancing impurity within the silicide layer as recited in claim 15 combines two processing steps of Fujii (forming the silicide layer and then implanting with boron) into one. Accordingly, this recited limitation of claim 15 can **not** be reasonably stated to be an obvious matter of design choice, because if such was true, then Fujii would have included such a teaching to eliminate one processing step to potentially improve yield output. Additionally, the Federal Circuit has stated that to require an Applicant to include in his specification evidence and arguments regarding whether particular subject matter was a matter of “design choice” would be tantamount to requiring the applicant to divine the rejections the PTO will proffer before the application is filed. *In re Chu*, 66 F.3d 292, 36 USPQ2d 1089, 1094 (Fed. Cir. 1995). Pursuant to the above arguments and authority, the Examiner’s rationale to support the obviousness rejection on the “obvious matter of design choice” is inappropriate, and therefore, the obviousness rejection based on such a rationale fails. For the above stated reasons, claim 15 is allowable.

Claims 16-19 and 38 depend from independent claim 15, and therefore, are allowable for the reasons discussed above with respect to the independent

claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the obviousness rejection against claim 20 based on Fujii, such claim recites subjecting the silicide layer to a rapid thermal processing step... while exposing the silicide layer to an oxide-comprising atmosphere. As stated previously with respect to independent claim 1, the Examiner takes official notice that post processing including RTP steps to activate dopants and annealing in oxygen-comprising atmospheres are well known process steps used in the semiconductor manufacturing art. Further as demonstrated with respect to independent claim 1, basing an obviousness rejection on the rationale of “well known in the art” is inappropriate. Accordingly, the obviousness rejection against claim 20 fails. Applicant respectfully requests allowance of claim 20 in the next office action.

Claim 39 depends from independent claim 20, and therefore, is allowable for the reasons discussed above with respect to the independent claim, as well as for its own recited features which are not shown or taught by the art of record.

Regarding the rejection against claim 29 based on Fujii, such claim is amended to recite before the providing of the conductivity-enhancing impurity, patterning the silicon-comprising layer and silicide layer into a conductive line. Such amendment language is supported by the originally-filed application at, for example, pages 10-11. Fujii teaches “B<sup>+</sup> ions are implanted into the entire portions of a tungsten silicide layer 12...th n...the tungsten silicide layer 12, and

the silicon oxide film are etched so that a desired pattern can be obtained.” (col. 4, lines 30-50) (emphasis added). That is, Fujii teaches **after** providing dopant in the silicide layer 12, patterning the silicide layer 12, not before as recited in claim 29. Therefore, in no fair or reasonable interpretation does Fujii, singularly or in any combination with the art of record, teach or suggest **before the providing of the conductivity-enhancing impurity**, patterning the silicon-comprising layer and silicide layer as recited in claim 29. Fujii, singularly or in any combination with the art of record, fails to teach or suggest a positively recited limitation of claim 29, and therefore, claim 29 is allowable. Applicant respectfully requests allowance of claim 29 in the next office action.

Claims 30-32 and 40 depend from independent claim 29, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

If the Examiner maintains the obviousness rejections based on Fujii, Applicant respectfully requests identification of additional prior art or specific teachings within the existing art in a non-final office action which discloses the alleged teachings suggested by the Examiner, or the submission of an affidavit to support the Examiner’s rejection, pursuant to MPEP §2144.03 and 37 C.F.R. §1.104(d)(2). “Assertions of technical facts in areas of esoteric technology must always be supported by citation of some reference” and “allegations concerning specific ‘knowledge’ of the prior art, which might be particular to a particular art



should also be supported.” *In re Ahlert*, 424 F.2d 1088, 165 USPQ 418, 420-421 (CCPA 1970) (emphasis added). 37 C.F.R. §1.104(d)(2) states “when a rejection in an application is based on facts within the personal knowledge of an employee of the office, the rejection must be supported by an affidavit when called for by the applicant.” Since the Examiner has taken official notice to a list of teachings of recited limitations missing from Fujii, the obviousness rejections are clearly based on facts within the personal knowledge of the Examiner. Without supporting prior art, affidavit or other evidence that Applicant can rebut, Applicant is denied an opportunity during prosecution to properly respond to the obviousness rejection due to the lack of prior art. According to 37 CFR §1.104(d)(2), Applicant should have the opportunity to contradict or explain such prior art. The lack of prior art to support the Examiner's rejection clearly indicates Applicant's claims are not obvious. Identification of additional prior art or specific teachings within the existing art, or an affidavit, is requested and appropriate.


Further, Applicant herewith submits a duplicate copies of the Information Disclosure Statement, Supplemental Information Disclosure Statements and Form PTO-1449s filed together in this application on June 11, 1999, February 7, 2002, March 13, 2002, and May 6, 2002. **No initialed copies of the PTO-1449s have been received back from the Examiner.** To the extent that the submitted references listed on the Form PTO-1449s have not already been considered, and the Form PTO-1449s have not been initialed with copies being

returned to Applicant, such examination and initialing is requested at this time, as well as return of the initialed Form PTO-1449s to the undersigned.

This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the undersigned respectfully requests a telephone interview prior to issuance of any such subsequent action.

Respectfully submitted,

Dated: 4-30-03

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